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CLAIMS

1. An image reproducing and forming apparatus comprising:

5 an ejection head configured to eject a liquid droplet from a nozzle to form an image on a medium;

 a driving signal generating unit configured to generate a driving signal having a waveform that causes the ejection head to operate at a driving

10 frequency other than the natural frequency of the ejection head; and

 a driving unit configured to drive the ejection head based on the driving signal supplied from the driving signal generating unit.

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2. The image reproducing and forming apparatus of claim 1, wherein the driving signal generating unit produces the driving signal including a non-ejecting pulse that produces energy for not ejecting the droplet, and the driving unit applies the non-ejecting pulse to the ejection head in a non-printing range in order to drive the ejection head at the driving frequency other than the natural frequency of 25 the ejection head.

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3. The image reproducing and forming apparatus of
claim 2, wherein the driving signal generating unit
5 produces the non-ejecting pulse, making use of a
portion of an ejecting pulse of the driving signal.

4. The image reproducing and forming apparatus of
10 claim 2, wherein the driving signal generating unit
produces the non-ejecting pulse that draws in a
meniscus of the nozzle.

15 5. The image reproducing and forming apparatus of
claim 2, wherein the driving signal generating unit
produces the non-ejecting pulse that pushes out a
meniscus of the nozzle and has a pulse width smaller
than a period of pressure-induced resonance in a
20 liquid chamber of the ejection head.

6. The image reproducing and forming apparatus of
claim 2, wherein the non-ejecting pulse has a falling
25 edge with a first rate of voltage change and a rising

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edge with a second rate of voltage change that is smaller than the first rate of voltage change.

5 7. The image reproducing and forming apparatus of
claim 2, wherein the non-ejecting pulse includes a
first portion that draws in a meniscus of the nozzle
with a first rate of voltage change and a second
portion that restores the meniscus of the nozzle with
10 a second rate of voltage change smaller than the
first rate of voltage change.

15 8. The image reproducing and forming apparatus of
claim 2, wherein the non-ejecting pulse includes a
first waveform that pushes out a meniscus of the
nozzle and a second waveform that follows the first
waveform to draw in the meniscus of the nozzle, the
first waveform having a pulse width smaller than a
20 resonant frequency of a liquid chamber of the
ejection head.

25 9. The image reproducing and forming apparatus of
claim 2, wherein the driving signal includes a first

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non-ejecting signal inserted at a beginning of the driving signal and a second non-ejecting signal inserted at an end of the driving signal.

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10. The image reproducing and forming apparatus of claim 2, wherein the ejection head includes an actuator for producing a pressure to eject the droplet, and the driving signal including the non-ejecting pulse is applied to the actuator.
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